Docket No. US010209

Amendment
Serial No. 09/837,936

IN THE SPECIFICATION

Kindly replace the first paragraph on page 2 with the following:

time. In the conventional RBPP method, the sender transmits to the receiver two back-to-back packets (which are called the packet pair), of sizes s_1 and s_2, respectively. As these packets traverse an end-to-end path, they are spread out by the bottleneck link. The spacing between the arrived packets is typically increased because the bottleneck link is slower than the previous links. As a consequence, it takes longer to transmit each packet over the slow bottleneck link. In the remaining path, the new spacing ΔT between the packets is preserved unless a much [[a]] slower bottleneck link is encountered.

Kindly replace the first paragraph on page 3 with the following:

Both of the above prior art methods of estimating the bandwidth have many drawbacks. First, both techniques are highly sensitive to packet compression events - a phenomenon which ~~occur~~ occurs when packets arrive closer to each other than they were originally sent out. Thus, both methods produce an inaccurate estimation of bottleneck bandwidth if employed in the existing Internet in real-time. In addition, as the second method is proposed for off-line operation and requires an entire set of bandwidth samples to be ready at the time of estimation, real-time application of the method is not feasible. Moreover, both methods do not address the delay variation incurred by the OS kernel of the client machine during the scheduling and switching operations. Hence, the detected inter-packet spacing ΔT may be significantly skewed by the OS operation before the packets are passed to the destination node, thus resulting in an inaccurate estimation of the bottleneck bandwidth B_B. Furthermore, both methods require the transmission time

stamps to be placed in each packet, thereby increasing the overhead. In addition, RBPP sends special probe packets to measure the bandwidth and incurs extra bandwidth overhead.

<u>Kindly replace the first paragraph on page 9 with the following:</u>

within a given burst. In addition, bursts of packets during which the client received a retransmitted packet, are discarded as well. If there were no missing packets in the burst of packets and no retransmission in the middle of the burst, a bandwidth sample B_i is ~~measures~~ <u>measured</u> in step 230 as follows.

<u>Kindly replace the first paragraph on page 10 with the following:</u>

sample of bandwidth B_i based on burst i is equal to the last partial sample: $B_i = b_i(n_i)$. In the multi-channel link environment (hereinafter referred to as ERBPP$_+$ method), sample B_i is selected as the smallest value of partial samples $b_i(k)$, for all k: $B_i = \forall k$: min $(b_i(k))$. Furthermore, the ERBPP method that considers *only* bursts with at least m packets is called ERBPP$_m$. Suggested value of m is at least 3. Similarly, the ERBPP$_+$ method that analyzes at least m packets is called ERBPP$_{m+}$. The same value $m = 3$ is suggested for ERBPP$_{m+}$. Once a ~~samples~~ <u>sample</u> B_i is computed using ERBPP$_m$ or ERBPP$_{m+}$ at time t, it is added to the set of collected samples $B_M(t, \Delta)$ and stays there for no longer than Δ time units.